

**Amendments to the Claims:**

This listing of claims will replace all prior versions and listings of claims in the application:

**Listing of Claims:**

1 – 16 (Canceled)

17 – 28 (Withdrawn)

29. A method for analyzing a change in the functionality of the heart and the respiratory system of a patient, comprising:

- identifying the respiratory activity and cardiac sounds;
- temporally segmenting said respiratory and said cardiac sounds to express the segments of physiological rhythmicity ;
- extracting stable features of the heart sounds with respect to their timing in the respiratory cycle, thus providing synchronized stable features for diminishing stochastic variability;
- averaging the features of segments of heart sounds with respect to the corresponding respiratory cycle whilst preserving the temporal variability of said segments;
- determining the extent of temporal variability of groups of synchronized stable sound features, and
- detecting change over time of at least one feature in a synchronized stable sound relative to a baseline .

30. A method for analyzing a change in the functionality of the heart and the respiratory system of a patient as in claim 29, said method used for synchronizing a heartbeat synchronized system, said analyzing based on the information derived from the group of items consisting of: heart sounds amplitude, interval between them, amplitude and frequency content, and any combination thereof.

31. A method for analyzing a change in the functionality of the heart and the respiratory system of a patient, comprising:

- identifying the respiratory activity and cardiac sounds;
- temporally segmenting respiratory and sounds and cardiac electrocardiographic signals to express the segments of physiological rhythmicity ;
- extracting stable features of the heart sounds with respect to their timing in the electrocardiographic signals, thus providing synchronized stable features for diminishing stochastic variability;
- averaging the features of segments of heart sounds with respect to the corresponding electrocardiographic signals whilst preserving the temporal variability of said segments;
- determining the extent of temporal variability of groups of synchronized stable sound features, and
- detecting change over time of at least one feature in a synchronized stable sound relative to a baseline.

**Annotated version of the Claims:**

29. A method for analyzing a change in the functionality of the heart and the respiratory system of a patient, comprising:

- identifying the respiratory activity and cardiac sounds;
- temporally segmenting (comms. 1, 1A, 1B) said respiratory and said cardiac sounds to express the segments of physiological rhythmicity (comm 2) ;
- extracting stable features (comms. 3, 4) of the heart sounds with respect to their timing in the respiratory cycle (comm. 5), thus providing synchronized stable features (comm. 4) for diminishing stochastic variability;
- averaging the features of segments of heart sounds (comm. 6) with respect to the corresponding respiratory cycle (comm. 7) whilst preserving the temporal variability (comm. 8) of said segments;
- determining the extent of temporal variability (comms. 8, 9, 9B) of groups of synchronized stable sound features, and
- detecting change over time of at least one feature in a synchronized stable sound relative to a baseline (comms. 10, 10B).

30. A method for analyzing a change in the functionality of the heart and the respiratory system of a patient as in claim 29, said method used for synchronizing a heartbeat synchronized system, said analyzing based on the information derived from the group of items consisting of: heart sounds amplitude, interval between them, amplitude and frequency content, and any combination thereof.

31. A method for analyzing a change in the functionality of the heart and the respiratory system of a patient, comprising:

- identifying the respiratory activity and cardiac sounds;
- temporally segmenting (comms. 1, 1A, 1B) respiratory and sounds and cardiac electrocardiographic signals (comm. 21) to express the segments of physiological rhythmicity (comm 2) ;
- extracting stable features (comms. 3, 4) of the heart sounds with respect to their timing in the

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electrocardiographic signals (comm. 22), thus providing synchronized stable features (comm. 4) for diminishing stochastic variability;

- averaging the features of segments of heart sounds (comm. 6) with respect to the corresponding electrocardiographic signals whilst preserving the temporal variability (comm. 8) of said segments;
- determining the extent of temporal variability (comms. 8, 9, 9B) of groups of synchronized stable sound features, and
- detecting change over time of at least one feature in a synchronized stable sound relative to a baseline (comms. 10, 10B).